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ABSTRACT

This two-volume set, consisting of an instructor's manual and a student learning activity guide, is designed for use in teaching vocational agriculture students basic agricultural production skills. Provided in the instructor's manual are guidelines concerning the duration of the activity; activity goals; a list of instructional objectives; a list of vocational clusters addressed during the activity; detailed guidelines pertaining to such areas of activity implementation as safety, materials needed, preparation prior to class, presentation of the lesson, and follow-up activities; an answer key; an occupational fact sheet; and a flow chart. The student learning activity guide includes an introduction; goals; directions; a list of materials needed; a series of instructional objectives and checkpoints dealing with seed planting, harvesting, and the need to wait until after harvest to pay crop-related bills; and descriptions of nine related occupations. (MN)

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AGRICULTURE — AGRICULTURAL PRODUCTION I, SEED BED

Unit No. AG — 1.1

INSTRUCTOR'S MANUAL

AND

STUDENT LEARNING ACTIVITY

GUIDE

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1984

TITLE OF ACTIVITY

Kit No. 105 -- Agriculture -- Agricultural Production I, Seed Bed

DURATION

Main Activity -- 3 to 5 class periods (50 min) for getting the activity started. The entire activity will continue over a period of about 1½ to 2 months.

Follow-up Activity -- 1 to 5 class periods (50 min.), depending on the activities used.

GOALS

The purpose of this activity is to introduce the students to some of the skills and activities involved in one phase of agricultural production. The activities explored are agricultural sales, construction, soil and seed bed preparation, seed planting, seedling care, transplanting, and the selling of the products. Most important, the students experience the farmer's situation of having to purchase supplies and wait until harvest to pay the bills.

Farm Hand I: Upon completion of this activity, the student will have a better understanding of some of the activities that are performed by a farm hand I.

Farm Hand II: Upon completion of this activity, the student will be aware of some of the activities of a day-to-day farm hand II.

Hotbed Worker: Upon completion of this activity, the student will have a better understanding of the type of activities performed by a hot bed worker.

Farm Hand-Inventory Clerk: Upon completion of this activity, the student will be aware of some of the record keeping and inventory activities necessary in the operation of a truck farm.

Sales Representative--Farm Equip. & Supplies: Upon completion of this activity, the student will have a better understanding of the duties performed by farm equipment and supplies sales representatives.

Farm Hand-Sales: Upon completion of this activity, the student will have a better understanding of some of the selling activities of farmers.

County Farm Agent: Upon completion of this activity, the student will have a better understanding of some of the activities of a county farm agent.

Truck Farmer: Upon completion of this activity, the student will have some insight into the type of activities performed by a truck farmer.

INSTRUCTIONAL OBJECTIVES

Individual Activity Objectives are as follows:

Farm Hand I

Objective I: The student will measure and cut boards for the seed beds 18" x 30" x 6". (45.72 cm x 76.2 cm x 415.24 cm)

Objective II: The student will nail the boards together to form the box frame.

Objective III: The student will measure and cut the bottom for the box.

Objective IV: The student will glue and nail the bottom onto the box frame.

Objective V: The student will line the box with plastic.

Objective VI: The student will collect and prepare transplant cups.

Farm Hand II

Objective I: The student will mix the soil for the planting bed.

Objective II: The student will transplant the plants when the farmer instructs.

Objective III: The student will care for plants until sold.

Hotbed worker

Objective I: The student will plant the seeds in the prepared seed beds.

Objective II: The student will care for and water the seeds in the hotbed and the plants when they come up.

Farm Hand-Inventory Clerk

Objective I: The student will record and list all important information on all seeds planted.

Objective II: The student will label each seed bed as to variety and each

transplant cup as the seedlings are transplanted.

Objective III: The student will total expenses and determine cost per plant for each variety.

Sales Representative-Farm Equipment & Supplies

Objective I: The student will prepare a bill for the materials ordered by the farmer.

Objective II: The student will deliver the ordered materials to the work areas.

Farm Hand-Sales

Objective I: The student will set a reasonable price for the plants.

Objective II: The student will sell or take orders for the plants when they are ready.

County Farm Agent

Objective I: The student will advise the farmer and farm workers when they have problems.

Truck Farmer

Objective I: The student will order the necessary supplies for the activity from the Farm Equipment & Supplies Sales Representative.

Objective II: The student will supervise the Farm Hand I in the construction of the seed bed box and transplant cups.

Objective III: The student will supervise the Farm Hand II in the mixing of the soil and the transplanting and care of the seedlings.

Objective IV: The student will supervise the hotbed worker.

Objective V: The student will check to see that the Farm-Hand Inventory Clerk performs the assigned activities properly.

Objective VI: The student will work with the County Farm Agent in determining planting procedures and solving problems.

Objective VII: The student will assist the Farm Hand-Sales in selling the seedlings.

VOCATIONAL CLUSTERS

Agriculture Education
Business Education
Marketing and Distributive Education
Trade and Industrial Education

ACTIVITY IMPLEMENTATION

A. Activity Description

A farmer is selected to supervise a tomato seedling enterprise. Students perform activities representing the various responsiblities of a truck farmer: supplies, construction, preparation of seed bed, planting, transplanting, care, and selling the product.

The farmer orders the supplies needed for the preparation of tomato seed beds (another crop may be substituted). Trays or boxes are constructed for the seed beds. The seed is planted according to directions and watered. Accurate records must be maintained as to species identification, expenses, planting dates, dates watered, transplanting dates, etc. Seed beds must be placed where they can receive daylight. Weekly care must be provided. When the plants have developed properly, they are transplanted into containers for further development until the seedlings are "sold".

Workers may now collect for their labors. Just as farmers must wait until harvest to sell their products and have money to pay their creditors, the students in this enterprise must wait to be "paid" for their labors.

This project works best if begun in mid-February.

B. Safety Rules

Always notify the instructor immediately when you are injured, no matter how slight the injury.

Safety goggles of an approved type should be worn when sawing, hammering, etc.

Keep aisles and walkways clear of excess materials, scrap, or waste.

Sharp edged tools should be carried with the sharp points and edges downward.

Return all tools to proper storage after use.

Avoid needless shouting, whistling, or horseplay in the class or shop.

Keep nails, tacks, tomato leaves out of your mouth. Tomato leaves are very poisonous if eaten.

Be careful of splinters when using wood with rough edges.

Follow all directions.

C. Materials Required

1. Audio Visual Equipment
   - Film strip projector
   - Screen
   - Cassette player
2. Technical Equipment
   - Claw hammer (16 oz.)
   - Circular power saw
   - Combination Square (8")
   - Folding Rule (6 ft. — 1.8288 M)
   - Scissors (Straight trimmer)
   - Carpenter's (2 foot) (0.60 m) square
   - Shovel, Large handle, round
   - Rake, 4 teeth, 14" wide, depth of the teeth, 2¼"
   - Planting guides **(Home Vegetable Gardening,** Circular 570)
   - Safety goggles
3. Expendable Materials
   - Pencils, one per student
   - Paper, 20 sheets (8½" x 11")
   - 10 index cards (3½" x 11")
   - Masking tape, ½" (1.27 cm) roll
   - Empty can, 1 gallon
   - Potting soil, 6 gallons (22.7124 l)
   - Masonry sand, 3 gal. (11.3562 l)
   - ½" (1.29 cm) gravel, 1 to 2 gal. (3.7854 l — 7.5708 l)
   - Board, 1" x 6" x 8' (2.54 cm x 15.24 cm x 2.4384 m)
   - Plywood, ¼" x 24" x 36" (0.635 cm x 60.96 cm x 91.44 cm)
   - Plastic, roll 4 mil 3' (0.9144 m) roll
   - Clean trash can or bucket
   - White glue, 8 fl. oz.
   - Tacks, 30 1/2" — 3/4" (1.27 cm — 1.905 cm)
   - Nails, 20, 8 penny
   - Empty milk cartons ½ pt. (0.2365 litre), 70 — 80
   - Used newspapers
   - Tomato seeds, 12 packs

D. Preparation Prior to Class

1. Obtain all of the necessary materials.
2. Choose the number of programmed texts needed for your class. Variations in class size from 9 to 27 students may be made by either combining or increasing the number of jobs. The following diagram indicates the jobs that can be increased.
   - Farmer — 1 . . . 1
   - Farm Hand—Sales Representative 1 . . . 4
   - Farm Equipment & Supply Sales Representative 1 . . . 2
   - Farm Hand I — 2 . . . 6
   - Farm Hand II — 2 . . .6
   - Farm Hand-Inventory Clerk 1 . . . 3
   - Hot bed Worker — 1 . . . 4
   - County Farm Agent — 1 . . . 1
3. Set up the following work areas:
   - Supply - corner of class with several desks and chairs (place all supplies in this area).
   - Farm Sales - desks and chairs on another side of the room
   - Farm Hand I - open areas of class, near electrical outlet
   - Farm Hand II - open area of class with table or floor space
   - Inventory Clerk — desk and chair
   - Hotbed Worker - open area in class near windows with table
   - Farm Agent - desk and chair
   - Farmer - desk and chair

   Place placards on the appropriate desks or work areas.
4. Material Distribution - taken care of by the students
5. Choose the Farmer and allow time to become familiar with the activity.
6. Set up the audio-visual materials.

E. During the Class Session

INTRODUCTION — This activity represents some of the activities of a vegetable farmer or a truck farmer. This is a basic project involving the growing of early spring vegetable plants to be sold. All of the activities explained in this project illustrate some of the various responsibilities of a truck farmer.

The activity is based on the preparation of a proper seed bed, the planting and care of the tomato plants, and then the sale of the plants. With the proper planting directions or a planting guide, other seeds could be used instead of the tomato, such as peppers, squash, cucumbers, eggplant, watermelon, and cantaloupe.

The activity takes three to five days (50 minute periods) to get the seed beds constructed, soil mixed, and the seed planted. The seed beds and plants will need occasional care for the next five to eight weeks. Just as a farmer must wait until harvest to sell their products to have money to pay their creditors, the students in this enterprise must wait to be paid for their labors.

The activity works best if begun around Valentine's Day or shortly thereafter (mid-February). The teacher will provide the materials, set up the working areas, and serve as an advisor for the project. The farmer will be in charge of the project, coordinating all of the various activities. The other students must follow the directions of the farmer.

The activity is completed when the plants reach the final transplanting stage. The students can take the plants home for their gardens as "pay" for their work or the plants may be "sold" by the class to cover the expenses involved in the project.

The class may want to grow more than one kind of vegetable or to prepare an area near the school to transplant some of the plants. These could be cared for until maturity and then harvested.

2. Show the filmstrips "Gardening An Introduction" "Tomatoes: From Seed to Table."
3. Have the students select one of the programmed texts.
4. Explain the flow chart and how the activity will progress.
5. Inform the farmer as to the type of seed to be planted and if there will be more than one variety.
6. Explain that the farmer will have control over the complete activity. The teacher's role will be that of an advisor.
7. Oversee the activity and give advice and assistance when necessary.

F. Follow-up Activities

1. Have students fill out VIEW fact sheet about an occupation related to agricultural production.
2. The students can utilize the skills and experiences learned in the main activity and plant another crop or a second tomato crop. The only changes in directions will be in the planting and care which can be found in the planting guides.
3. Some students may wish to establish seed beds at home for family gardens. Arrange for these students to have access to the planting guides. Additional guides and information can be obtained at the County's Clemson Extension Service, Office of the County Farm Agent. These students should report to the class regularly the progress of their enterprise.
4. Arrange for the County Farm Agent to visit the class and talk about the various careers in agricultural production. The agent could explain his/her duties fully.
5. Arrange for the students to visit a Farm Supply Center or a local truck farmer or a local Vocational Center that teaches Agricultural Production.
6. The students may want to plant their seedlings in a local "garden" and care for them until maturity. These students could report to the class after the project ended.

MASTERS FOR DUPLICATION

Occupational Fact Sheet
Flow Chart

OCCUPATIONAL FACT SHEET

NAME _____ CLASS _____ OCCUPATION _____

A. List the advantages (good points) of this occupation (job).

B. List the disadvantages (bad points) of this occupation (job).

C. List three things you should know to do this occupation (job).
1.
2.
3.

D. What type of education should you get to be prepared (do) for this occupation (job)?

E. What courses must you take to go into this occupation (job)?

F. What do you think your future in this occupation (job) will be?

G. What wage can you expect in this occupation (job)?

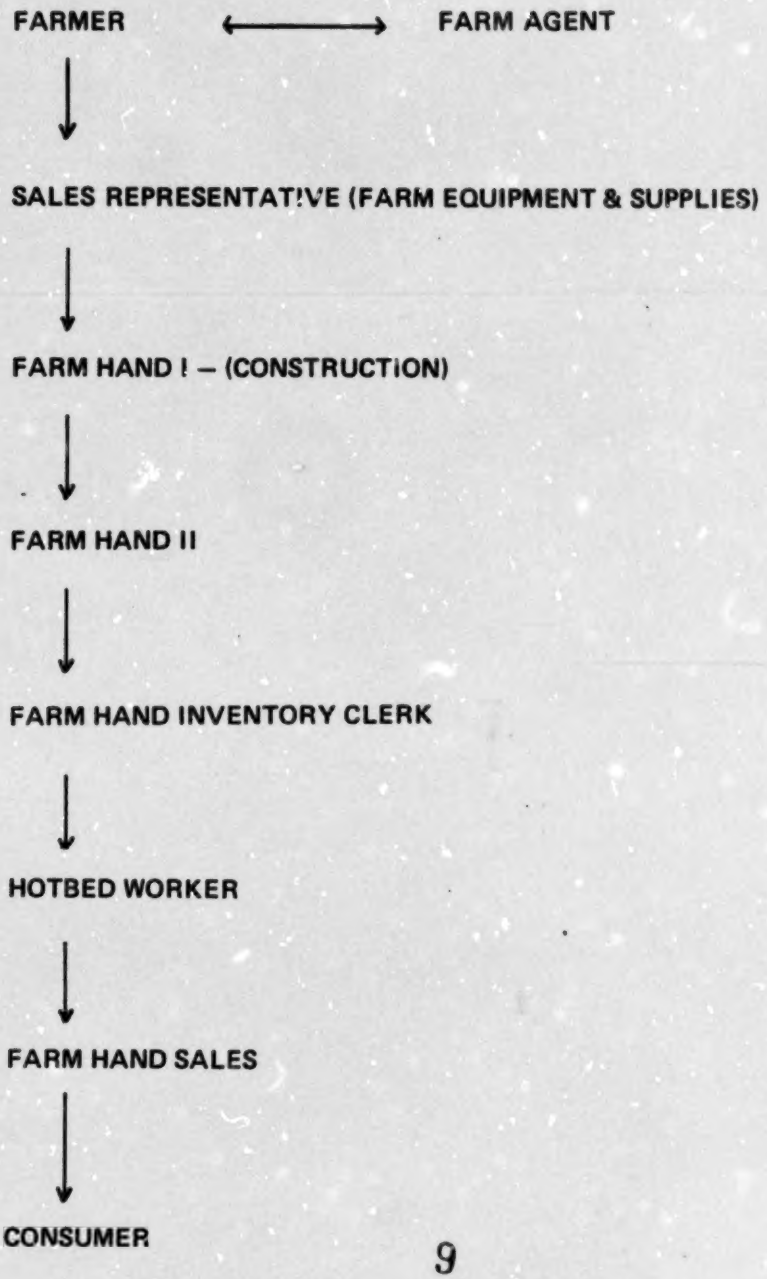
H. What are the working hours of this occupation (job)?

I. To learn more about this occupation (job), write to:

J. Using a scale of 1 to 5, circle the number that measures your interest in this occupation (job) as a possible career.

I don't like it. 1 2 3 4 5 I like it.

FLOW CHART


FARMER
FARM AGENT
SALES REPRESENTATIVE (FARM EQUIPMENT & SUPPLIES)
FARM HAND I – (CONSTRUCTION)
FARM HAND II
FARM HAND INVENTORY CLERK
HOTBED WORKER
FARM HAND SALES
CONSUMER

AGRICULTURE — AGRICULTURAL PRODUCTION 1, SEED BED

Kit No. AG — 105

STUDENT

LEARNING ACTIVITY GUIDE

State Department of Education
Office of Vocational Education
Prevocational Education
Columbia, South Carolina 29201

1984

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1984

INTRODUCTION

This activity represents some of the activities of the forest industry. This is a very basic project and the skills introduced are fundamental to forestry. Activities related to other occupational fields are also explored.

The activity is based on the construction of a Biltmore or cruise stick for estimating diameters and heights of trees. It will take one or two class periods to make and label the cruise sticks and two to four days to learn to pace and estimate tree diameters and heights.

The teacher will provide the materials and equipment, establish the work areas, appoint the forest supervisor(s), and serve as an advisor for the activity. The forest supervisor(s) will be in charge of all individual activities. Report to the teacher regarding the progress of the activity and ask for assistance with major problems.

The following materials are needed to perform this activity:

Student Learning Activity Guide
Technical equipment and
expendable supplies as listed

The Biltmore sticks can be taken home by the students after the activity has been completed. Some students may wish to measure timber at home.

DIRECTIONS

After the teacher has selected a forest supervisor to oversee the activity and has explained the activity to the class, each student will choose a programmed text and read it carefully. The teacher will explain materials and answer questions. The forest supervisor will take charge. Each student will report to the work area indicated in the programmed text and begin work when the forest supervisor gives the go-ahead.

FOREST SUPERV!SOR

FOREST SUPERVISOR

INTRODUCTION

The forest supervisor helps the forester aides in making Biltmore or cruise sticks and supervises the use of the sticks in measuring diameters and heights of the trees.

GOAL

The student will develop a better understanding of the activities of a forest supervisor and the use of forestry tools.

DIRECTIONS

Follow the directions very carefully. Complete each step before continuing to the next step. If a problem arises, ask the teacher for help.

MATERIALS

Abney level
100-ft. steel tape (30.48 m)
Thumb tacks
Paper
Pencil
Chalk
Masking tape
Tree-diameter tape

PROGRAMMED TEXT

Instructional Objective 1

Given the teacher's instructions to take charge, the student will check to see that each student has a programmed text.

STEP 1 – The forest supervisor will take charge of the activity.

STEP 2 – Instruct each student to select a programmed text.

STEP 3 — Instruct the forester aides to read the programmed texts.

STEP 4 — Answer the forester aides' questions. The forest supervisor may seek the help of the teacher.

Check Point

Before continuing to the next step, get the teacher's approval.

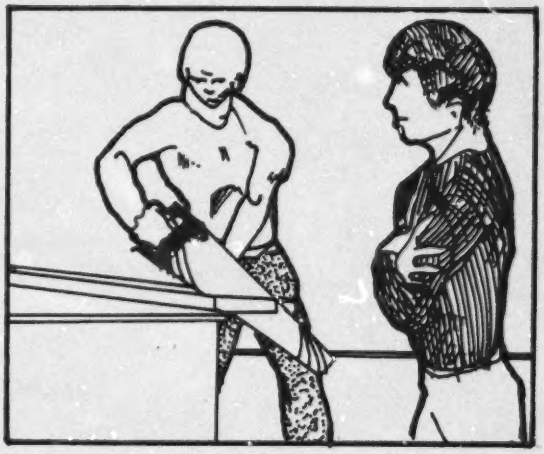
If the teacher gives the go-ahead, continue to the next objective.

If the teacher does not give the go-ahead, re-do the steps in Instructional Objective I.

Instructional Objective II

The student will supervise the making of the cruise sticks.

STEP 1 — Check with the aides as they measure their sticks to be cut.

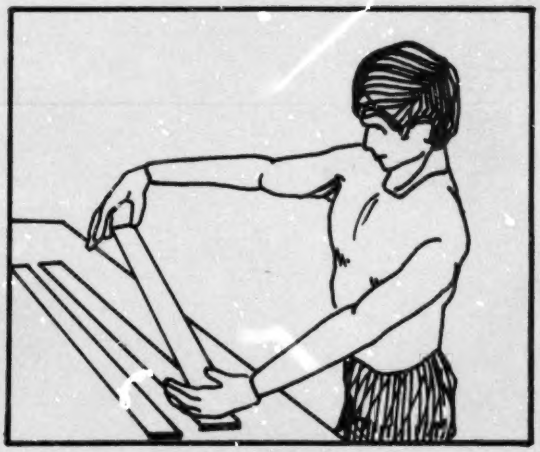


STEP 2 — Check with the aides as they cut out the stick with the handsaw.

STEP 3 – Check each stick to see that it measures 1¼ inch wide (3.175 cm) and 25 inches long (63.5 cm).

STEP 6 – Check with the aides as they engrave the cruise sticks.

STEP 4 – Check with the aides as they label the sticks.



STEP 7 – Check the sticks after they are engraved.

STEP 5 – Check the finished stick to be sure that it is the same as the model stick.

STEP 8 – Refer to the teacher questions you cannot answer.

Check Point

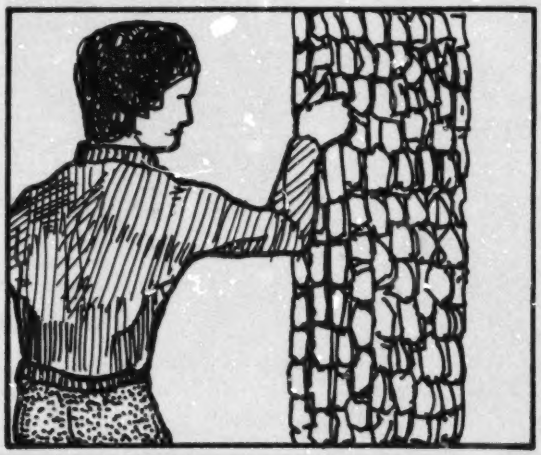
Check with the teacher for his/her approval before continuing to the next step.

If the work is approved, continue to the next objective.

If the work is not approved, re-do the steps in Instructional Objective II.

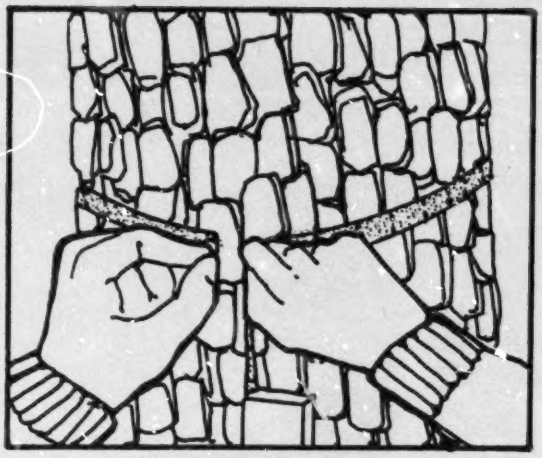
Instructional Objective III

The forest supervisor will oversee the forester aides as they estimate tree diameters.



STEP 1 – Number the trees that were selected by the teacher with the paper and thumb tacks.

STEP 2 – Assist the forester aides as they estimate diameters.



STEP 3 – Measure the circumference (distance around the tree) of each tree at breast height, using the steel tape for tree diameters.

STEP 4 – Record the diameter of each tree beside the tree number as read from the tree diameter tape.

STEP 5 – Check the forester aides' estimated diameters.

Check Point

Before continuing to the next objective, check with the teacher for approval.

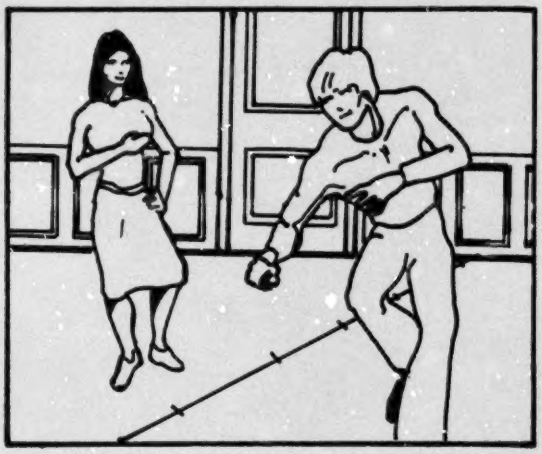
If the teacher gives the go-ahead, continue to the next Instructional Objective.

If the teacher does not give the go-ahead, re-do the steps in Instructional Objective III.

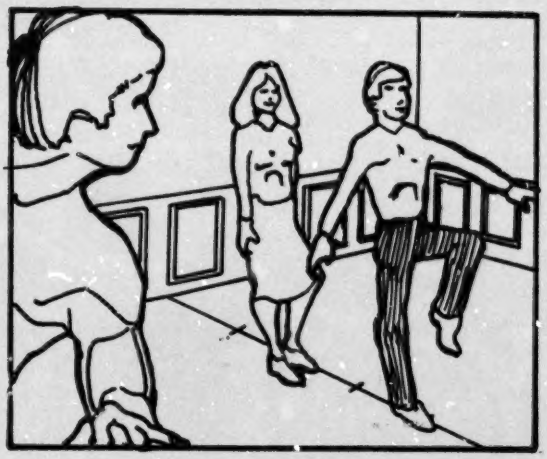
Instructional Objective IV

The forest supervisor will oversee the forester aides as they learn to pace.

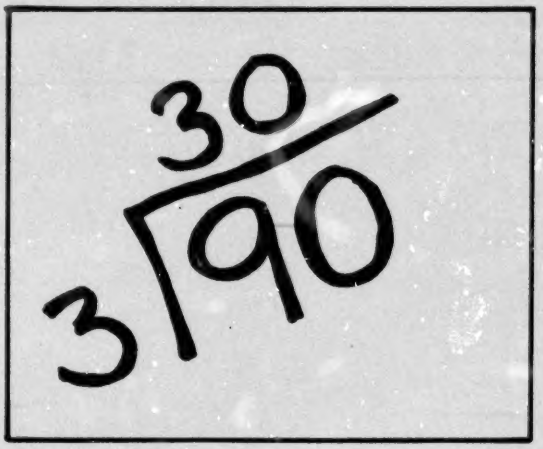
STEP 1 – Using the steel tape, measure 90 feet (27.43 m) on a site selected by the teacher.



STEP 2 – Mark the distance every three feet (.914 m) with some type of marker (chalk on asphalt, masking tape on a hall floor, markers on a football field, etc.).



STEP 3 – Supervise the forester aides as they practice pacing the distance.



STEP 4 – Make sure the forester aides step 1 yard (.914 m) each step or 30 steps for the measured distance.

Check Point

Before continuing to the next step, check to see that all the forester aides can pace the 90 feet (27.43 m) in thirty steps.

If all students pace properly, continue to the next step.

If some of the forester aides do not pace properly, go back and follow directions.

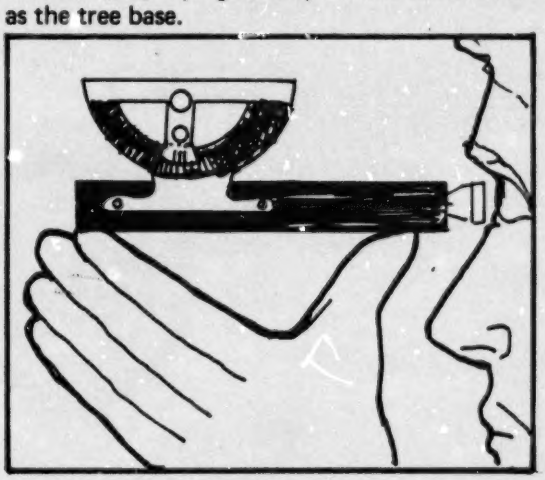
Instructional Objective V

The forest supervisor will check the forester aides' estimated tree heights.

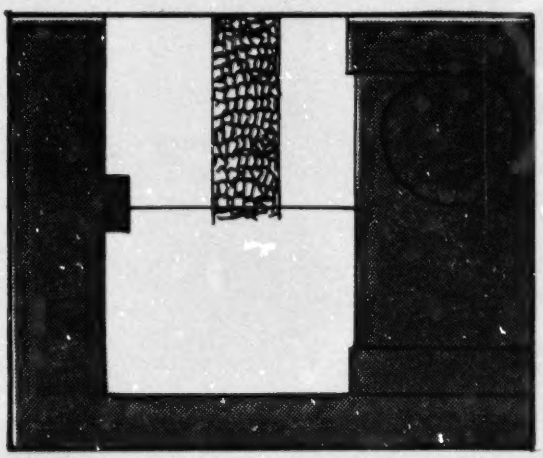
STEP 1 – Go to the tree site with the forester aides.

STEP 2 – Supervise the students as they estimate tree heights.

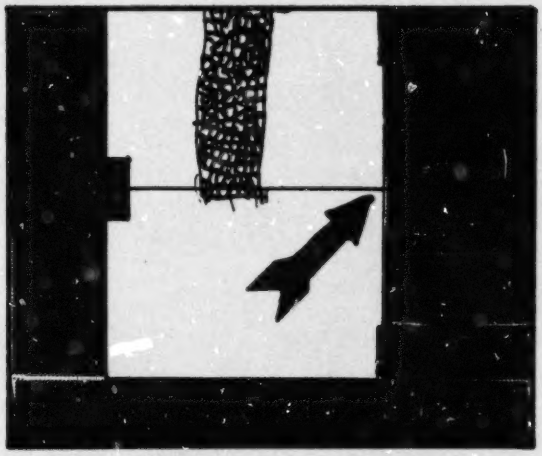
STEP 3 – Using the 100-ft. (30.48 m) tape, measure 66 feet (20.12 m) from the the base of each tree, trying to stay on the *same level* as the tree base.



STEP 4 – Using the Abney level and standing 66 feet (20.12 m) from the base of the tree, sight through the level scope at the base of the tree.



STEP 5 – Line the horizontal cross-hair up with the tree base.

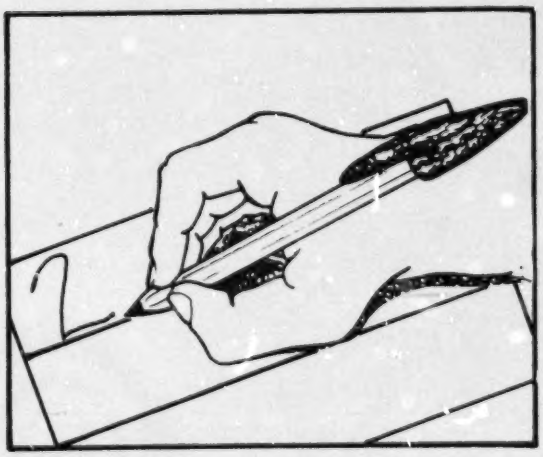


STEP 6 – While keeping the cross-hair on the tree's base, move the scale on the side until you see the bubble line up on the cross-hair.

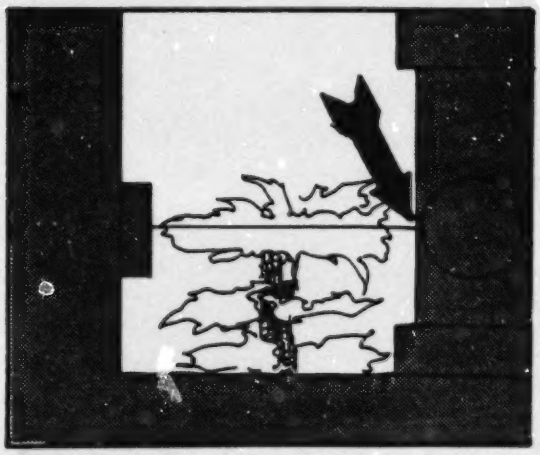
STEP 9 – Sight through the level at the tree top.

STEP 7 – Put the Abney level down and read the number off the scale in degrees.

STEP 10 – Line the cross-hair up with the top of the tree's trunk.

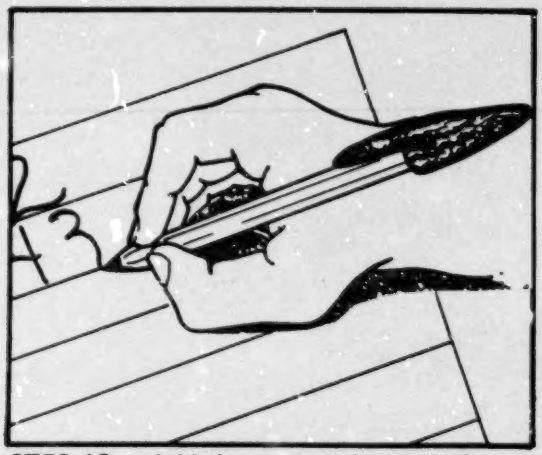


STEP 8 – Write the number down.



STEP 11 – Keeping the cross-hair on the top of the tree's trunk, move the scale so that the bubble lines up on the cross-hair.

STEP 12 – Put the level down and read the number from the scale.



STEP 13 – Add the two numbers together to get the tree's height.

STEP 14 – Repeat for each of the preselected trees.

STEP 15 – Check the forester aides's estimated heights against the heights determined by the Abney level.

Check Point

Check with the teacher for approval.

If teacher does not approve the heights, repeat Instructional Objective V.

FORESTER AIDE

INTRODUCTION

Using the sticks, the forester aide will estimate the saw logs available in 10-20 preselected trees. (The forester aide works under the supervision of the forest supervisor in making cruise sticks.)

GOALS

The student will develop a better understanding of the use of some forestry tools and activities performed by forester aides.

DIRECTIONS

Follow the directions very carefully, step-by-step, completing each step before continuing to the next step. If any problem arises, ask the forest supervisor for assistance.

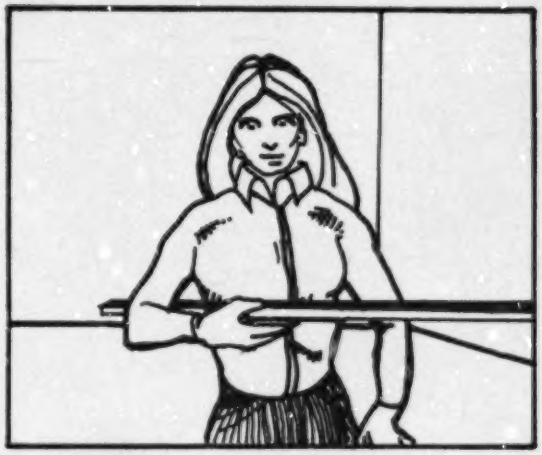
MATERIALS

½" x 6" (1.27 x 15.24 cm) board
1 cruise stick
handsaw
pencil
hand engraver
combination square
6 ft. (1.83 m) rule
safety goggles
masking tape
sandpaper
paper

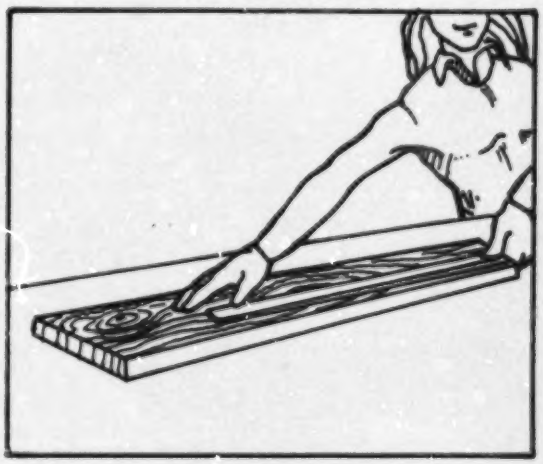
PROGRAMMED TEXT

Instructional Objective 1

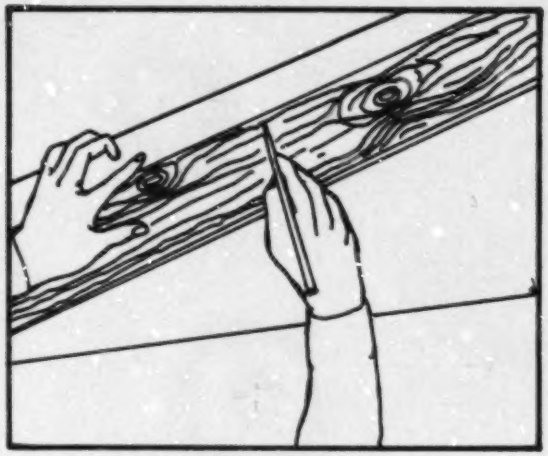
The student will cut out a Biltmore or cruise stick from the ½" x 6" board (1.27 x 15.24 cm).



STEP 1 – Obtain a ½" x 6" board (1.27 x 15.24 cm).

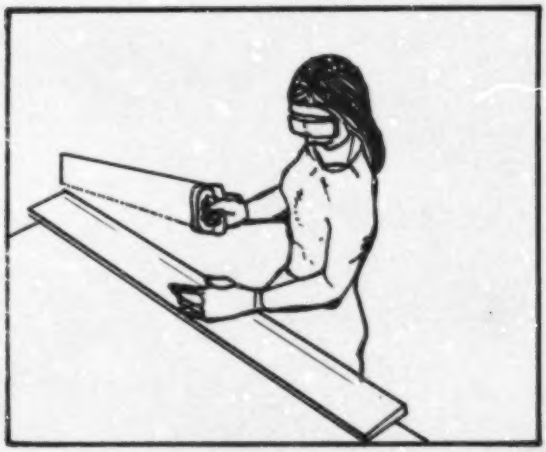


STEP 2 – Measure a stick 1¼" wide (3.17 cm) by 25" long (63.5 cm) on the board.



STEP 3 – Using a pencil, draw lines to be cut.

STEP 4 – Put on safety goggles.



STEP 5 – Using the handsaw, follow the pencil lines and cut out the stick.

STEP 6 – Sand the stick with sandpaper until smooth.

Check Point

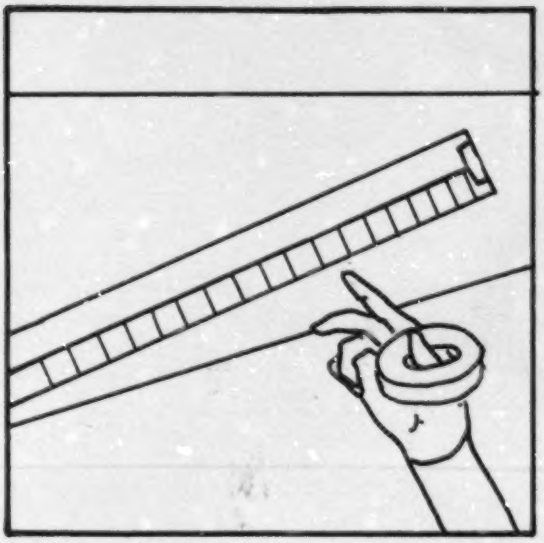
Before continuing to the next step, have the forest supervisor check the stick for proper size.

If the stick's measurements are okay, continue to the next step.

If the stick is not approved, determine the error and re-do the steps following directions.

Instructional Objective II

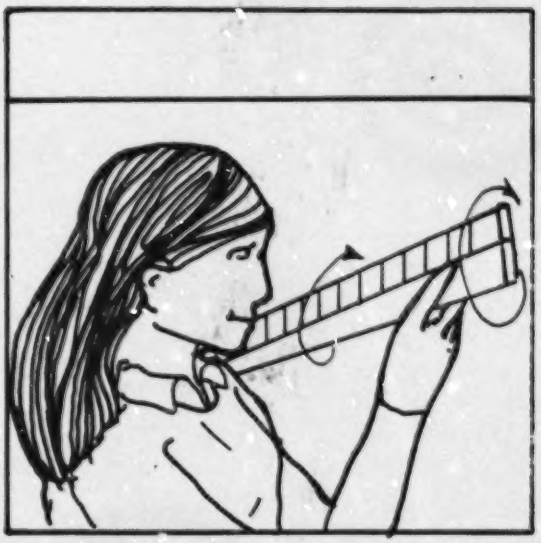
The student will label the cruise stick.



STEP 1 – Tape the cruise stick and the stick just cut together with masking tape, keeping the ends even.

STEP 2 – Using a pencil, mark the stick exactly as the cruise stick is marked.

STEP 3 – Label the marks as they are labeled on the cruise stick.



STEP 4 – Turn stick over and repeat the process.

Check Point

Before continuing to the next step, have the forest supervisor check the labeling and marks on the stick.

If the stick is approved, untape the sticks and continue to the next step.

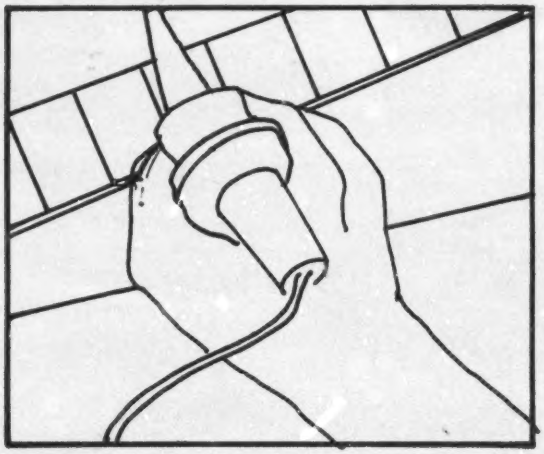
If the stick is not approved, determine the error; go back and follow directions.

Instructional Objective III

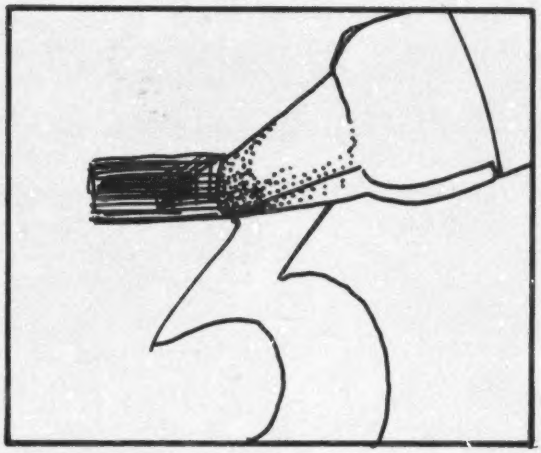
The student will engrave the marks into the stick.

STEP 1 – Using the combination square, make sure all the marks are straight.

STEP 2 – Plug in the hand engraver.



STEP 3 – Carefully follow each line and engrave the mark into the wood.



STEP 4 – Using the engraver, trace over the labeled numbers.

Check Point

Before continuing to the next step, have the forest supervisor check the engraved stick.

If the stick is approved, continue to the next step.

If the stick is not approved, determine the error and re-do the steps following directions.

Instructional Objective IV

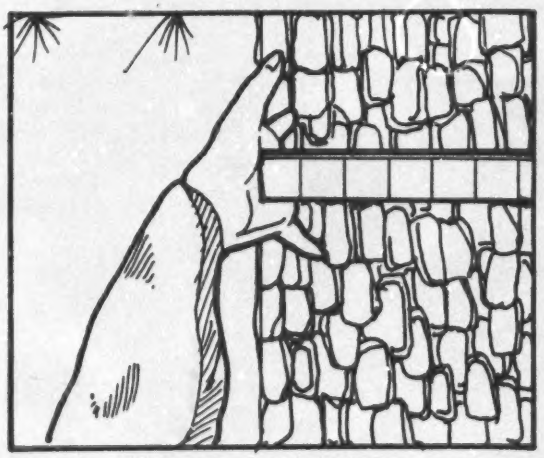
The student will use the new cruise stick to estimate diameters of the preselected trees.

STEP 1 — Take pencil, paper, and new cruise stick and go to the site of trees to be measured.

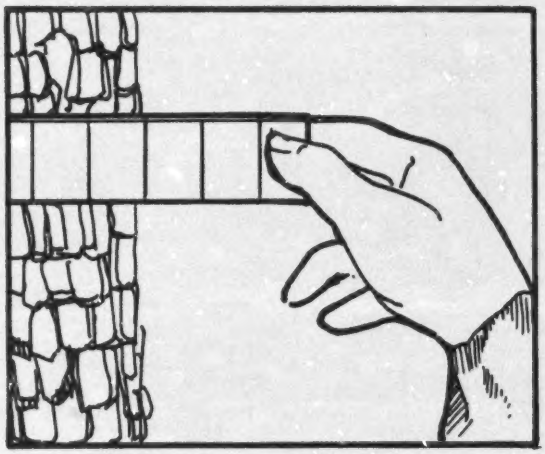
STEP 2 — Number the paper 1, 2, 3 . . . depending on the number of trees.

STEP 3 — Hold the stick so that you face the diameter side.

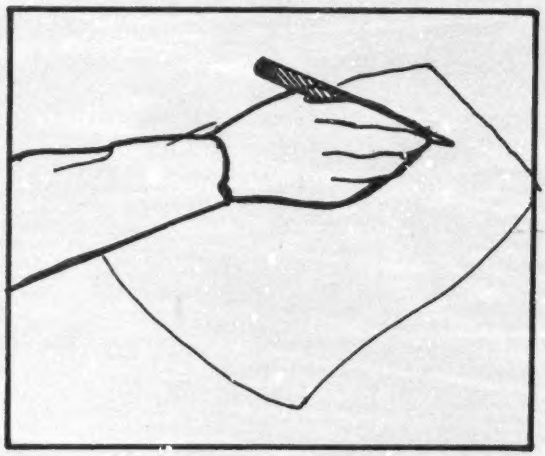
STEP 4 — Hold the stick at arm's length horizontally across the tree at breast height. (Distance betweer eye level and cruise stick must be 25 inches - 63.5 cm.)



STEP 5 — Align the left end of the stick with the left side of the tree.



STEP 6 – Without moving your head, read the diameter off the right side of the stick by noticing where right side of the tree and the stick meet.



STEP 7 – Record the diameter on the paper beside the tree number.

STEP 8 – Repeat this process for each tree.

Check Point

Before continuing to the next step, wait as the forest supervisor measures the trees with the steel tape at breast height to determine the diameter.

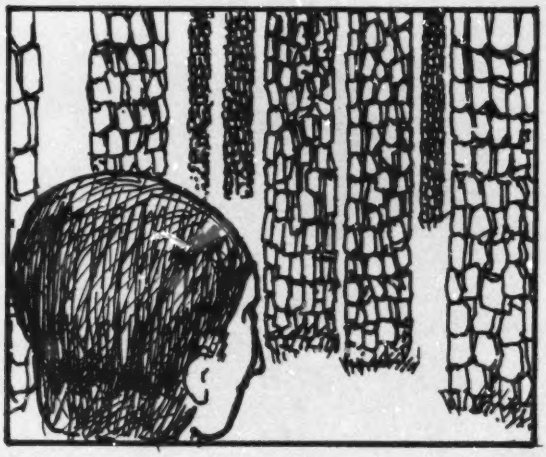
If your diameter measurements check, continue to the next step.

If the diameters do not check, go back and re-estimate the diameters following directions.

Instructional Objective V

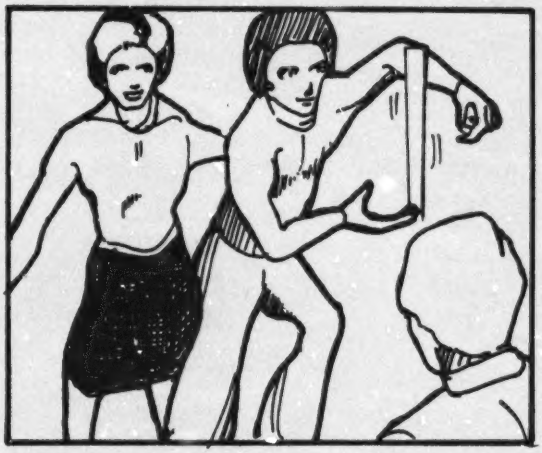
The student will use the new cruise stick to determine tree height.

STEP 1 – Practice pacing on the premeasured site, trying to walk 1 yard (.91 m) per step.

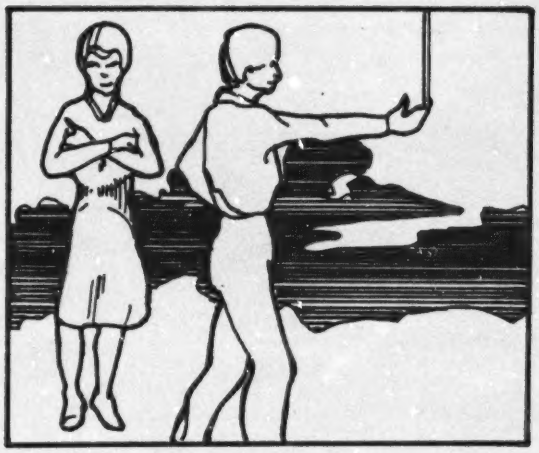


STEP 2 – Go to the site of the trees.

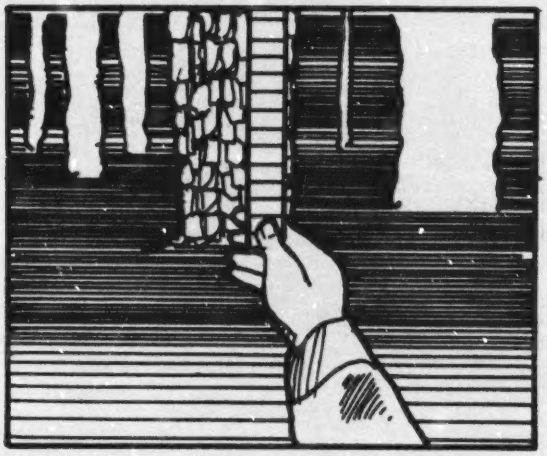
STEP 3 – Beginning at the base of the first tree, pace off 66 feet (20.12 m) or 22 yards (20.12 m) in a straight line away from the tree. Stay on the same level as the base of the tree if possible.



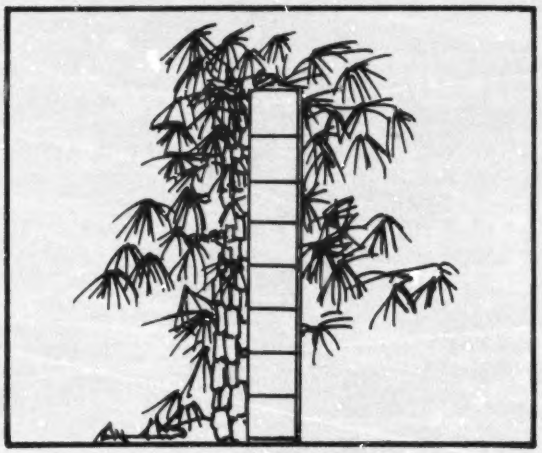
STEP 4 – Facing the tree, hold the cruise stick in a vertical position.



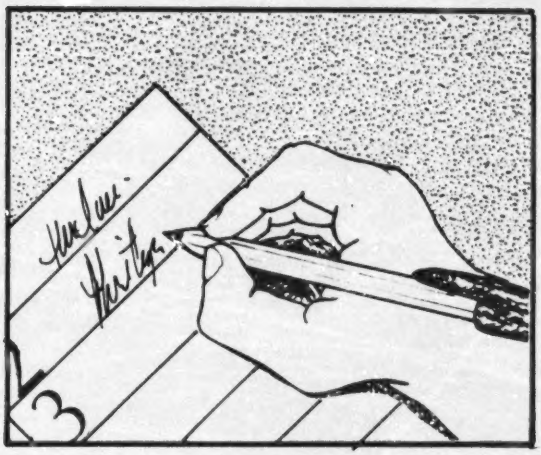
STEP 5 – Hold the stick at arm's length.



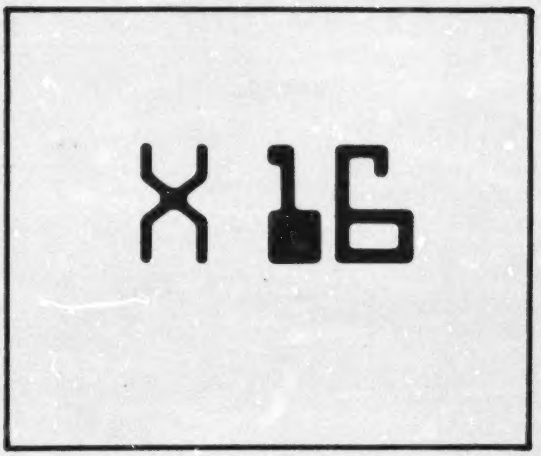
STEP 6 – Line up the lower end of the stick with the base of the tree.



STEP 7 – Read the number of foot logs (a unit of measure used in forestry) from the upper end of the stick where it lines up with the upper end of the tree.



STEP 8 – Record this number beside the proper tree number on the paper.



STEP 9 – Multiply this number times 16. The answer will be the marketable height of the tree in feet.

STEP 10 – Repeat the process for each tree.

Check Point

Before continuing to the next step, check with the forest supervisor to see what his/her measurements were using the Abney level.

If the tree heights check, continue to the next step.

If the tree heights do not check, re-do objective following instructions.

451.137-010 FOREST NURSERY SUPERVISOR (forestry)

Supervises and coordinates activities of workers engaged in planting, cultivating, and harvesting seedling forest trees and grading, bundling, bailing, or otherwise packing trees for storage or shipment at forest nursery. Performs duties as described under SUPERVISOR (any ind.).

451.137-014 SUPERVISOR, CHRISTMAS-TREE FARM (forestry) crew boss.

Supervises and coordinates activities of workers engaged in planting, shearing, thinning, and harvesting Christmas trees on company-owned or leased land tracts: Tours land tracts to ascertain conditions and estimate work-hour requirements to plant, cultivate, or harvest trees. Confers with management to report conditions of lands and crops, recommend actions to be taken, and obtain instructions regarding variety and number of trees per acre to plant, cultural practices to apply, and harvesting date and location. Trains workers in planting, shearing, or harvesting trees. Performs duties as described under SUPERVISOR (any ind.).

451.687-010 CHRISTMAS-TREE FARM WORKER (forestry)

Plants, cultivates, and harvests evergreen trees on Christmas-tree farm: Removes brush, ferns, and other growth from planting area, using mattock and brush-hook. Plants seedlings, using mattock or dibble [TREE PLANTER (forestry)]. Scatters fertilizer pellets over planted areas by hand. Shears tops and limb tips from trees, using machete and pruning shears, to control growth, increase limb density, and improve shape. Selects trees for cutting according to markings or size, specie, and grade, and fells trees, using ax or chainsaw. Drags cut trees from cutting area, and loads trees onto trucks. May be designated according to seasonal task performed.

451.687-018 SEEDLING PULLER (forestry) tree puller.

Harvests tree seedlings in forest nursery: Walks along seedling tree rows, stoops, and pulls clumps of seedlings from loosened soil. Knocks clumps together to dislodge soil and loosen roots, and places seedlings in field trays.

451.687-022 SEEDLING SORTER (forestry) tree sorter.

Sorts tree seedlings in forest nursery: Removes seedlings from field trays, separates them, and compares root formation, stem development, and foliage condition with standards chart and verbal instructions. Discards substandard seedlings and places remainder on conveyor for bailing.

452.364-010 FORESTER AIDE (forestry) forest technician.

Compiles data pertaining to size, content, condition, and other characteristics of forest tracts, under direction of FORESTER (profess. & kin.); and leads workers in forest propagation, fire prevention and suppression, and facilities maintenance: Traverses forest in designated pattern to gather basic forest data such as topographical features, species and population of trees, wood units available for harvest, disease and insect damage, tree seedling mortality, and conditions constituting fire danger. Marks trees of specified specie, condition, and size for thinning or logging. Collects and records data from instruments, such as rain gage, thermometer, stream-flow recorder, and soil moisture gage. Holds stadia rod, clears survey line, measures distances, records survey data, and performs related duties to assist in surveying property lines, timber sale boundaries, and road recreation sites. Trains and leads conservation workers in seasonal activities, such as planting tree seedlings, collecting seed-cones, suppressing fires, cleaning and maintaining recreational facilities, and clearing fire breaks and access roads. Gives instructions to visitors of forest, and enforces camping, vehicle use, fire building, sanitation, and other forest regulations.

452.367-014 FIRE RANGER (forestry)

Patrols assigned area of forest to locate and report fires and hazardous conditions and to insure compliance with fire regulations by travelers and campers: Hikes or drives to vista points to scan for fires and unusual or dangerous conditions. Reports findings and receives and relays emergency calls, using telephone or two-way radio. Visits camping sites to inspect activities of campers and insure compliance with forest use and fire regulations. Gives instructions regarding sanitation, fire, and related forest regulations. Extinguishes smaller fires with portable extinguisher, shovel, and ax. Serves as crew leader for larger fires. Renders assistance or first aid to lost or injured persons. Participates in search for lost travelers or campers.

452.687-010 FOREST WORKER (forestry)

Perfroms variety of tasks to reforest and protect timber tracts and maintain forest facilities, such as roads and campsites: Plants tree seedlings in specified pattern, using mattock, planting hoe, or dibble. Cuts out diseased, weak, or undesirable trees, and prunes limbs of young trees to deter knot growth, using handsaw, powersaw, and pruning tools. Fells trees, clears brush from fire breaks, and extinguishes flames and embers to suppress forest fires, using chainsaw, shovel, and engine-driven or hand pumps. Clears and piles brush, limbs, and other debris from roadsides, fire trails, and camping areas, using ax, mattock, or brush hook. Sprays or injects trees, brush, and weeds with herbicides, using hand or powered sprayers or tree injector tool. Erects signs and fences, using posthole digger, shovel, tamper, or other handtools. Replenishes firewood and other supplies, and cleans kitchens, restrooms, and campsites or recreational facilities. Holds measuring tape or survey rod, carries and sets stakes, clears brush from sighting line, and performs related tasks to assist forest survey crew.

452.687-018 TREE PLANTER (forestry)

Plants seedling trees to reforest timber lands or Christmas tree farms: Digs planting hole at predetermined spaced interval, using mattock-like tool or dibble. Places seedling in hole and packs soil around plant, using foot or planting tool.